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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/820,573 | 04/07/2004 | Alain Bruyere | 0179.0046 | 8563 |
| 26067 | 7590 | 03/28/2006 | EXAMINER | |
| HEXCEL CORPORATION 11711 DUBLIN BOULEVARD DUBLIN, CA 94568 | | | | AFTERGUT, JEFF H |
| | | ART UNIT | | PAPER NUMBER |
| | | 1733 | | |

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/820,573 | BRUYERE, ALAIN | |
| | Examiner | Art Unit | |
| | Jeff H. Aftergut | 1733 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 February 2006.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 and 40-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3,5-8,13-19 and 40-42 is/are rejected.
- 7) Claim(s) 4 and 9-12 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 6, 17 and 40-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Darrieux (newly cited).

Darrieux suggested that it was known at the time the invention was made to provide a deposition finger 1 comprising a presser head 15 that is shaped to exert a pressure on the reinforcing thread 10 as the thread 10 was deposited upon a surface 20. the reference taught that one provided the deposition finger 1 to extend from a deposition head 5. the deposition finger 1 was capable of movement relative to the head 5 as spring 4 provided for movement vertically relative to the head along the axis of the finger and is additionally provided with a support plate 3 which was free to rotate on the axis of the tool 5 in order to provide for rotation about the axis of the deposition head for the deposition finger 1. the reference taught that one skilled in the art would have provided a binder material on the support surface 20 in order to stick the thread 10 onto the surface. The reference additionally taught that successive layers of fiber thread would have been applied upon the surface. The use of the spring facilitated the exertion of a force perpendicular to the support surface to press the thread 10 against the surface 20 during deposition. The reference taught regarding claim 2 that the thread was advanced as the thread was being deposited with the use of a gear 18 which

engaged the gears 16 and 17. Note that as the placement head 15 which was associated with gear 17 was moved along the surface the gear 18 was rotated with engaged gear 16 and rotated roll 12 upstream of applicator presser head 15 whereby driving the thread 10 to feed the same to the presser head 15. regarding claim 6, note that the reference taught that the placement head 5 was part of a machine as depicted in Figure 15 which provided for movement of the deposition finger through various degrees of freedom of movement (through multiple axis) whereby the placement finger was always disposed against the surface to press the material against the surface. Regarding claims 40-42, note that the presser head 15 was provided with movement along the axis of the tool 5 with the use of the spring and additionally was provided with rotational movement relative to the tool 5 with the use of the free spinning plate 3 onto which the deposition finger was assembled. Regarding claim 17, note that the reference suggested that the surfaces 20 onto which the thread was applied included complex shapes of the specified nature.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-3, 5-7, 16-19, and 40-42 rejected under 35 U.S.C. 103(a) as being unpatentable over Darrieux in view of Zsolnay et al and optionally further taken with Blad (newly cited).

Darrieux is discussed above and applicant is referred to the same for a complete discussion of the reference. The reference suggested that the end of the finger was

used to press the material onto the surface. Note that the reference additionally provided for movement of the finger assembly in a rotated manner about an axis of the finger as well as vertical movement along the same axis. It should be noted that Darrieux suggested that one skilled in the art would have applied a binder upon the surface in order to attach the wire to the surface. The reference to Darrieux does not specify what type of binder was applied to the support surface. One skilled in the art of fiber placement would have understood that it would have been useful to apply a thermoplastic binder wherein the application head was heated in order to provide for securing the fibers in their desired local as evidenced by Zsolnay et al.

Zsolnay suggested that those skilled in the art would have applied fiber threads which were impregnated and/or coated with a thermoplastic material and heated the same at the point of lay down in order to facilitate the placement of the fibers on the surface of the form. The reference to Zsolnay suggested a precision manner for fiber placement which included a means for gathering the fiber tows on the placement roller followed by a means for depositing the fibers upon the surface. The processing included gathering the fiber tows on a application roller prior to translation of the roller along the application surface whereby the fiber tows would have been under little or no tension during application as the fibers were moved along the surface because they were separately gathered in an initial step and no additional gathering was performed during application of the tows to the surface (gathering is the pulling of the tows which would have tensioned the same). The pressing head of Zsolnay included a pressing roll with grooves therein as well as a finger means for retaining the tows against the pressing

roll, see various finger mechanisms as depicted in Figures 10-12 as well as the use of guide grooves as depicted in Figure 15. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the pressing roll of Zsolnay in the operation of making a composite perform by fiber tow placement wherein the roll was heated in order to facilitate adherence of the fiber tows onto the surface of the substrate wherein the fiber tows would have included a thermoplastic coating thereon wherein the placement head of Zsolnay included a roll with grooves thereon as well as the ability to place several tows on the surface simultaneously with the heated roll arrangement in the process of placing fibers on a surface with a finger assembly wherein the roller applicator would have included the ability to move the applicator head in various positions in order to press the material against the surface of the form as suggested by Darrieux.

While one skilled in the art might not view the roller as an application finger, it should be noted that the finger of the claimed invention comprised the presser head and the roller in Darrieux is clearly a presser head. To further evidence that a finger arrangement was known the reference to Blad is cited. More specifically, Blad suggested that one skilled in the art would have provided a head with a finger 66 which laid the fibers onto the surface to form a fiber composite material. It should be noted that the finger 66 in Blad was manipulated in much the same manner as the presser head of Darrieux (it was capable of rotation about the axis of the finger and included the ability additionally to move vertically along the axis of the finger). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a finger

(a pressing shoe) as opposed to a pressing roller for an application head of a fiber placement device as such was an art recognized equivalent as noted by Blad in the process of placing a fiber on a surface as taught by Darrieux as modified by Zsolnay et al.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with either one of Cano et al (the article entitled "Studies on Automated Manufacturing of High Performance Composites") or Muzzy et al for the same reasons as expressed in paragraph 6 of the Office action dated 12-7-05.

The reference to Zsolnay et al clearly suggested that the resin utilized in the fiber tow was a thermoplastic resin, however the reference failed to expressly state that one skilled in the art would have impregnated the same with a powder of the thermoplastic resin. However, the use of a powder for impregnation of a fiber tow in order to form an impregnated tow for the purposes of manufacturing a composite article were well known as evidenced by Cano et al or Muzzy et al (applicant is referred to the previous Office action for a complete discussion of these references). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the powder coated tows of either one of Muzzy et al or Cano et al in the operation for forming a resin fiber perform as set forth above in paragraph 4 as the use of the powder coated tow would have been understood to have been an art recognized equivalent to the thermoplastic impregnated fibers.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 4 further taken with Ebert.

The references as set forth above in paragraph 4 suggested that those skilled in the art at the time the invention was made would have incorporated a thermoplastic material within the tow being applied. The reference failed to expressly state that the thermoplastic matrix material was provided in the form of a strand of filament of thermoplastic material which was incorporated within the reinforcing fibers as a matrix for the reinforcement in the lay down assembly. Ebert expressly stated that it was known at the time the invention was made to incorporate a thermoplastic fiber in with the reinforcing fibers prior to placement on a surface in the formation of a composite article. Applicant is referred to the Office action dated 12-7-05 for a complete discussion of the reference to Ebert. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a reinforcing thread and a thermoplastic thread as the tow being applied as the reference to Ebert suggested the use of a matrix material in the form of a thread of thermoplastic was known per se and the references as set forth above in paragraph 4 clearly suggested that a thermoplastic matrix would have been used in the processing wherein one employed automated fiber placement to apply the fibers to the surface using the systems as set forth above in paragraph 4 for placement of the fiber tows on the surface. It should be noted that Ebert clearly suggested that one skilled in the art would have utilized automated fiber placement to apply the fibers upon the surface in the processing.

Allowable Subject Matter

7. Claims 4 and 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant is referred to paragraph 8 of the Office action dated 12-7-05 for a complete discussion of the reason why these claims have been indicated as allowable over the prior art of record.

Response to Arguments

8. Applicant's arguments with respect to claims 1-19 and 40-42 have been considered but are moot in view of the new ground(s) of rejection.

The applicant is advised that the use of the specified system for the application of the material upon the surface was known per se as evidenced for example by Darrieux. It should be noted that applicant amended the claim to remove the formation of the porous perform (which was why Ebert was applied to reject claim 1 as Ebert clearly related to a porous perform manufacture operation). As such, applicant's amendment to the claims has resulted in the application of the newly cited references and the making of this rejection FINAL is deemed appropriate.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference to Bubeck suggested the spraying of resin during the winding of the same with a robotic applicator in the winding operation. The reference did not envision that the spraying system applied the resin to the fiber at the point of lay

down on both the surface to be provided with the reinforcement as well as on the reinforcement.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
March 22, 2006